visits (August 17 and 31, 2000) failed to locate habitats for the Iowa darter within any of the small streams crossed by the ROW within the Project Area. This species appears to prefer streams with clear, cool water, abundant aquatic vegetation, and a sand or organic matter substrate. Also, it is absent from reaches of stream that do not have undercut banks (Woodling 1985).

The brassy minnow is native to the Platte River system and has been found in Lone Tree Creek and Spottlewood Creek (CNHP 1997) 7.5 miles northeast and 1.0 miles east of the Project Area, respectively. The occurrence of populations of this minnow in the Project Area has not been documented and land practices (e.g., grazing) along the small streams in the Project Area do not promote the proper habitat conditions for this species. This species appears to prefer streams with clear, cool water, abundant aquatic vegetation, and a gravel substrate (Woodling 1985).

3.3 HUMAN ENVIRONMENT

This section discusses the existing land ownership, zoning, land use, visual resources, socioeconomics, and public health and safety, and electric effects as they pertain to the Proposed Project.

3.3.1 Land Ownership

The land ownership in the Project Area consists of both private and public lands located within Larimer County as shown on **Figure 3-6**.

3.3.2 Zoning

The Larimer County Master Plan (LCPD 1997a) designates most of the land within the Project Area to the north of the City of Fort Collins as “Rural” or “Urban” lands. The Larimer County Land Use Code zoning categories for the land within most of the Project Area are primarily “O-Open” and “RE-Rural Estate” lands (**Figure 3-7**).

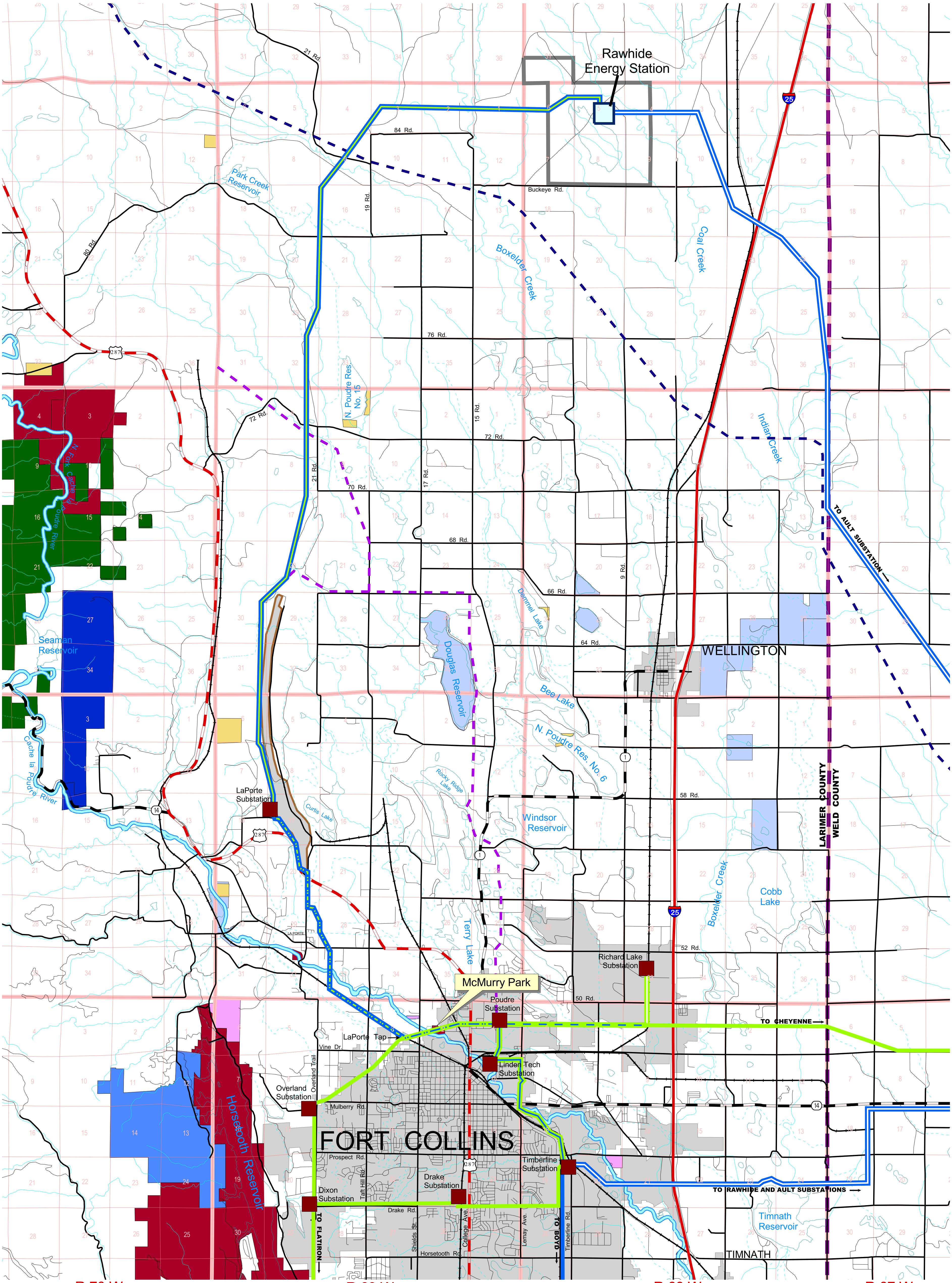
The City of Fort Collins zoning categories apply to the portion of the Project Area where the existing transmission line is located within the jurisdictional area of the city as shown on **Figure 3-8**.

3.3.3 Land Use

The following sections discuss the existing land uses within the Project Area, including agricultural/rangeland, residential, public land/designated open space, and infrastructure and ROWs.

3.3.3.1 Agriculture/Rangeland

The portion of the existing transmission line, between the LaPorte Tap and the Rawhide Energy Station, is considered rural land, predominantly agricultural and rangeland use. Agricultural lands include lands used for crop development. Typical crops in the area include barley, corn, oats, and hay crops (National Agricultural Statistics Service 1998).



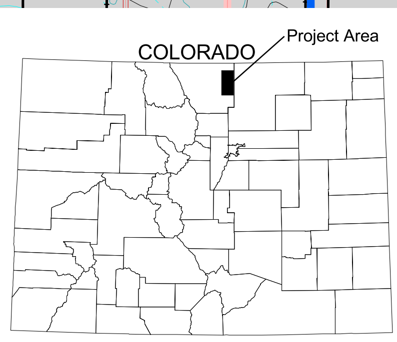
LEGEND

- Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
- Upgrade Existing 115kV Single Circuit to 115/230kV
- Rebuild Existing 115kV Single Circuit to115/230kV
- Convert Existing 115kV Double Circuit to 115/230kV
- Upgrade Existing 230kV Single Circuit to 230kV Double Circuit
- Existing 115kV Double Circuit
- Existing 230kV Double Circuit
- Existing 115kv Single Circuit
- Existing 230kV Single Circuit
- Existing Substation
- Rawhide Energy Station
- Rawhide Property Boundary
- Section Line
- County Line
- Township/Range
- Rural Electrical Association Transmission Line
- Western Area Power Administration 345kV Circuit

PUBLIC LANDOWNER

- Colorado Division of Wildlife
- Colorado State Parks
- Colorado State Trust Land
- Fort Collins
- Larimer County
- Bureau of Land Management
- US Forest Service

- US Interstate Highway
- US Highway
- State Highway
- Primary Road
- Secondary Road
- Railroad
- Cache la Poudre River
- Stream
- Ditch or Canal
- Aqueduct
- Lake/Reservoir
- Mine Boundary
- Municipality



SOURCE: Larimer County land ownership data provided by Larimer County Planning Department

GREYSTONE®

N

1 2 3 4 Miles

Scale

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-6
Public Lands - Ownership

R 70 W R 69 W R 68 W R 67 W

T 11 N T 10 N T 9 N T 8 N T 7 N

Rawhide Energy Station

21 Rd. 84 Rd. 19 Rd. 80 Rd. Buckeye Rd. Park Creek Reservoir Boxelder Creek Coal Creek 76 Rd. 72 Rd. N. Poudre Res. No. 15 15 Rd. 17 Rd. 21 Rd. 70 Rd. 68 Rd. 9 Rd. 66 Rd. Dammel Lake 64 Rd. WELLINGTON Douglas Reservoir Bee Lake N. Poudre Res. No. 6 58 Rd. Windsor Reservoir LARIMER COUNTY WELD COUNTY Indian Creek TO AULT SUBSTATION

Seaman Reservoir Cache la Poudre River N. Fork Cache la Poudre River LaPorte Substation Curtis Lake Rocky Ridge Lake Terry Lake Boxelder Creek Cobb Lake 52 Rd. Richard Lake Substation Poudre Substation 50 Rd. TO CHEYENNE

LaPorte Tap Vine Dr. Overland Trail Linden Tech Substation Overland Substation Mulberry Rd. Horsetooth Reservoir FORT COLLINS Prospect Rd. Timberline Substation Drake Substation Dixon Substation Taft Hill Rd. Drake Rd. TO FLATIRON TO BOYD Shields St. College Ave. Lemay Ave. Timberline Rd. Horsetooth Rd. TO RAWHIDE AND AULT SUBSTATIONS Timnath Reservoir TIMNATH

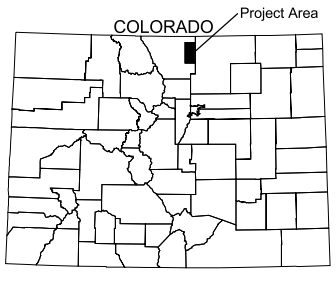
LEGEND

- Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
- Upgrade Existing 115kV Single Circuit to 115/230kV
- Rebuild Existing 115kV Single Circuit to115/230kV
- Convert Existing 115kV Double Circuit to 115/230kV
- Upgrade Existing 230kV Single Circuit to 230kV Double Circuit
- Existing 115kV Double Circuit
- Existing 230kV Double Circuit
- Existing 115kv Single Circuit
- Existing 230kV Single Circuit
- Existing Substation
- Rawhide Energy Station
- Rawhide Property Boundary

Zoning Code
- Business
- City
- Commercial
- Estate
- Farming
- Forestry
- Industrial
- Multi-Family
- Open
- Residential
- Rural Estate
- Tourist

- Mine Boundary
- Rural Electrical Association Transmission Line
- Western Area Power Administration 345kV Circuit

- US Interstate Highway
- US Highway
- State Highway
- Primary Road
- Secondary Road
- Railroad
- Cache la Poudre River
- Stream
- Ditch or Canal
- Aqueduct
- Lake/Reservoir
- Section Line
- County Line
- Township/Range



SOURCE: Larimer County zoning data provided by Larimer County Planning Department

GREYSTONE®

1 2 3 4 Miles

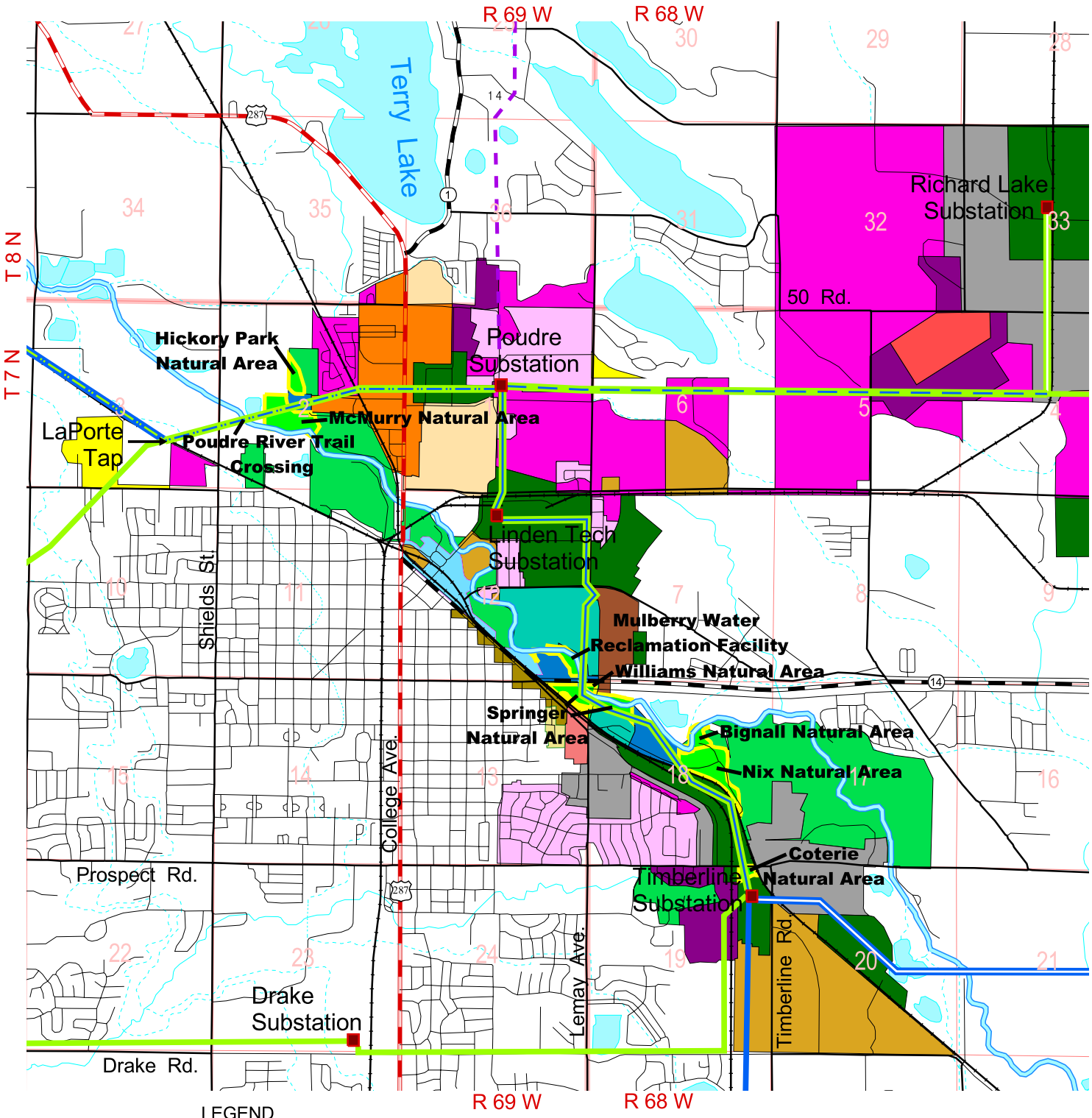
N Scale

Western AREA POWER ADMINISTRATION

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-7
Larimer County Zoning



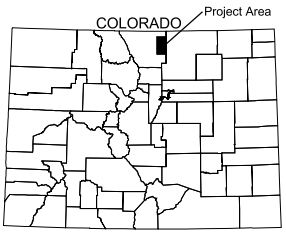
LEGEND

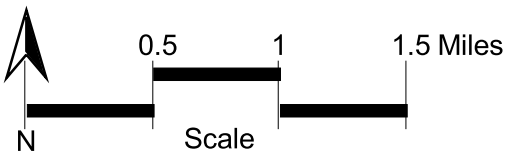
- Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
- Upgrade Existing 115kV Single Circuit to 115/230kV
- Rebuild Existing 115kV Single Circuit to115/230kV
- Convert Existing 115kV Double Circuit to 115/230kV
- Existing 115kV Double Circuit
- Existing 230kV Double Circuit
- Existing 115kv Single Circuit
- Existing 230kV Single Circuit
- Existing Substation
- US Highway
- State Highway
- Primary Road
- Secondary Road
- Railroad
- Cache la Poudre River
- Stream
- Ditch or Canal
- Aqueduct
- Lake/Reservoir
- Section Line
- Township/Range

City of Fort Collins Zoning Code

- Commercial
- Commercial, Limited
- Commercial, North College
- Community Commercial
- Community Commercial, North College
- Community Commercial, River
- Employment
- Industrial
- Low Density Residential
- Low Density, Mixed-Use Neighborhood
- Medium Density, Mixed-Use Neighborhood
- Neighborhood Conservation Buffer
- Neighborhood Commercial
- Public Open Lands
- River Conservation
- River Downtown Redevelopment
- Transition
- Urban Estate

- City of Fort Collins Natural Area
- Rural Electrical Association Transmission Line





SOURCE: City of Fort Collins zoning data provided by City of Fort Collins Geographic Information Services

GREYSTONE®

Western Area Power Administration

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-8

City of Fort Collins Zoning and Natural Areas

3.3.3.2 Residential

A few areas within the Project Area support residential land uses. Most residences adjacent to the rural portions of the existing ROW are located adjacent to state highways and county roads. There are no planned residential uses. The ROW of the existing transmission line is within an urbanized area between the LaPorte Tap and the Poudre Substation. To the west of the Poudre Substation and east of the river is a residential trailer park.

3.3.3.3 Public Land/Designated Open Space

Larimer County Parks and areas of special interest for preservation as open lands as designated by the Larimer County Parks Open Lands Program are shown in **Figure 3-6**. Public open lands and designated open space, such as river conservation and natural areas in the City of Fort Collins are shown on **Figure 3-8**. Wetland resources are defined by the county as areas for preservation, are designated as environmentally important ecosystems by the *Larimer County Master Plan* (LCPD 1997a), and were mapped for much of the Project Area as part of the Front Range Study Area (Cooper and Merritt, 1996) as shown on **Figure 3-5**.

The ROW of the existing transmission line traverses several City of Fort Collins Natural Areas along the Cache La Poudre River, which include from west to east the McMurry, Hickory, Mulberry Water Reclamation Facility, Springer, Bignall, Nix, and Coterie Natural Areas as shown on **Figure 3-8**. There are no federally- and state-designated wilderness areas, national parks, national natural landmarks, wild and scenic rivers, or state and federal wildlife refuges within or immediately adjacent to the ROW of the Proposed Project.

Other areas of special designation as defined and mapped in the *Larimer County Master Plan* (LCPD 1997a) for the Project Area include the following areas:

- 100-Year Floodplains;
- Wetlands; and
- Special Places of Archaeological, Cultural and Aesthetic Resources.

Floodplains and wetlands were previously discussed in **Sections 3.1.3** and **3.2.1.2**, respectively. Special Places of Archaeological, Cultural and Aesthetic Resources includes the areas defined and mapped in the *Larimer County Parks Comprehensive Parks Master Plan* (Larimer County Parks Department 1993) and including the following special areas:

- CNHP Conservation Sites and Important Wildlife Habitat Areas; and
- Sites and structures listed in State and National Registers of Historic Places (historic and cultural resources are discussed in **Section 3.4**);
- Known landmarks of local interest;
- Parks, public lands, significant open spaces, and recreation resources, including water features (i.e., lakes and reservoirs) and water-based recreation areas, and municipal parks or

special district areas and facilities (i.e., community/regional parks, golf courses, community centers, etc.).

- Prominent visual features, such as topographic features, notable geologic features, distinct landscape character zones, and other notable features (i.e., scenic backdrops or ridgelines, and aesthetic features).

CNHP Conservation Sites and Important Wildlife Habitat Areas within the Project Area generally correspond to the wetland areas (see **Section 3.2.1.2** and **Figure 3-5**).

Historic and cultural resources are discussed in **Section 3.4** and the Cultural Resource Survey (**Appendix C**). The *Larimer County Land Use Code*, Environmental Review checklist (LCPD 1999) requires identification of any mapped or registered sites or structures within 1,200 feet of proposed development sites, as well as other landmarks of local interest.

Other than the previously discussed CNHP Conservation Sites, the Project Area does not include areas designated by Larimer County as known landmarks, parks or recreation areas, or prominent visual features (LCPD 1999).

3.3.2.4 Infrastructure and ROWs

Numerous ROWs traverse the Project Area. The ROWs can be classified into three primary types including existing utilities, roads, and railroads as shown on **Figure 1-1.**

Access to existing agricultural operations and facilities in the Project Area is provided by a network of county roads and unpaved private roads. Utilities include natural gas pipeline, electric power transmission lines, and water transmission facilities.

3.3.4 Visual Resources

This section describes the Key Observations Points showing typical characteristics of the existing viewsheds surrounding the transmission line corridor, which include natural landscape features, and human activities and developments. In addition, Larimer County Visual Resource Management Planning is discussed.

3.3.4.1 Key Observation Points

The Project Area includes several existing transmission line corridors, two corridors originating in the vicinity of Fort Collins, Colorado, and one corridor originating near Ault, Colorado, to the Rawhide Energy Station. Visual modifications to the natural setting in the Project Area currently include agricultural and residential uses, existing roads, railroads, residential and commercial developments, and existing transmission lines.

The area is characterized by gently undulating to rolling high plain topography. Wide valleys are separated by broad, gently rolling to flat interstream divides. The Project Area landscape is generally typical of rural and agricultural settings in the plains of northern and eastern Colorado. Views in most directions from the transmission line corridors are expansive and relatively unobstructed. Views to the west include the Rocky Mountains and to the south, Long's Peak.

Structures are few and widely dispersed. Woodland belts along streams and roads are the principal natural obstructions to views, and provide visual contrast to the open croplands and range lands that dominate the area.

Key Observation points (KOPs) were selected within the Project Area based on the viewpoints from which the Proposed Project can be seen and that represent typical visual impacts on the greatest number of observers. KOP selection criteria included heavily used travel routes, viewpoints with the potential for extended viewing times, and generally, viewpoints that are typical to a large number of viewers. The primary views of the Project Area are from travel routes within the area.

The locations of the selected KOPs are shown on **Figure 3-9** and a brief description of each KOP location (see **Appendix G**) is provided in the following sections.

- KOP 1 is a view from Timberline Road at the Lamar and Weld Canal showing the existing 115kV wood pole transmission line.

- KOP2 shows a view to the south from Lincoln Avenue and Lemay Avenue of the existing 115kV transmission line crossing at the Link-N-Green Golf Course.

- KOP 3 provides a view of to the north and west of Lindenmeier Avenue and Conifer Street of the existing 115kV transmission line.

- KOP 4 is a view to the south from Conifer Street and Redwood Street of the existing 230kV transmission line.

- KOP 5 provides a view north of Hickory Street looking west from the railroad tracks of the existing 115kV transmission line. This location is in the vicinity of the Hickory Village Mobile Home Park.

- KOP 6 is a view of the existing 115kV double-circuit transmission line to the southeast from County Road 54G.

- KOP 7 show a view to the west from Red Road approximately 2.5 miles east of U.S. Highway 287 showing the existing 230kV transmission line.

R 70 W R 69 W R 68 W R 67 W

T 11 N T 10 N T 9 N T 8 N T 7 N

Rawhide Energy Station

21 Rd. 84 Rd. 19 Rd. Buckeye Rd. 80 Rd. 76 Rd. 72 Rd. 15 Rd. 17 Rd. 70 Rd. 68 Rd. 9 Rd. 66 Rd. 64 Rd. 58 Rd. 52 Rd. 50 Rd.

Park Creek Reservoir Boxelder Creek Coal Creek Indian Creek N. Poudre Res. No. 15 N. Fork Cache la Poudre River Seaman Reservoir Cache la Poudre River Dennmel Lake Douglas Reservoir Bee Lake N. Poudre Res. No. 6 Rocky Ridge Lake Curtis Lake Windsor Reservoir Terry Lake Boxelder Creek Cobb Lake Timnath Reservoir Horsetooth Reservoir

287 14 1 25

TO AULT SUBSTATION

WELLINGTON

LARIMER COUNTY
WELD COUNTY

LaPorte Substation
Poudre Substation
Richard Lake Substation
LaPorte Tap
Vine Dr.
Linden Tech Substation
Overland Substation
Overland Trail
Mulberry Rd.
Prospect Rd.
Taft Hill Rd.
Drake Substation
Timberline Substation
Dixon Substation
Drake Rd.
Shields St.
College Ave.
Lemay Ave.
Timberline Rd.
Horsetooth Rd.

TO CHEYENNE
TO RAWHIDE AND AULT SUBSTATIONS
TO FLATIRON
TO BOYD

FORT COLLINS
TIMNATH

LEGEND

Rebuild Existing 115kV Single Circuit to 115kV Double Circuit
Upgrade Existing 115kV Single Circuit to 115/230kV
Rebuild Existing 115kV Single Circuit to115/230kV
Convert Existing 115kV Double Circuit to 115/230kV
Upgrade Existing 230kV Single Circuit to 230kV Double Circuit
Existing 115kV Double Circuit
Existing 230kV Double Circuit
Existing 115kv Single Circuit
Existing 230kV Single Circuit
Existing Substation
Rawhide Energy Station
Rawhide Property Boundary
Rural Electrical Association Transmission Line
Western Area Power Administration 345kV Circuit

① Key Observation Points
US Interstate Highway
US Highway
State Highway
Primary Road
Secondary Road
Railroad
Cache la Poudre River Stream
Ditch or Canal
Aqueduct
Lake/Reservoir
Section Line
County Line
Township/Range
Mine Boundary
Municipality

COLORADO Project Area

SOURCE: Photographs at Key Observation Points (KOP's) taken by Greystone during reconnaissance of the project area.

GREYSTONE®

1 2 3 4 Miles
N Scale

Western AREA POWER ADMINISTRATION

PLATTE RIVER POWER AUTHORITY

FORT COLLINS TRANSMISSION LINE UPGRADE PROJECT

Figure 3-9
Key Observation Points

3.3.4.2 Larimer County Visual Resource Management

Larimer County Parks and areas of special interest for preservation as open lands as designated by the Larimer County Parks Open Lands Program are shown in **Figure 3-6**.

In addition, Larimer County has a proposed ridgeline protection strategy to protect ridgelines from development. Five counties, including Larimer County, participated in the Mountain Backdrop Study, with the goal of identifying key preservation elements of the foothills landscape in a conceptual manner. As a result, Critical Preservation Candidate Lands were identified in the *Larimer County Master Plan* (LCPD 1999). *The Larimer County Parks Comprehensive Parks Master Plan*, October 1993, identifies mapped sites or structures of local interest, including landmarks, Colorado Natural Areas Program Sites, and historic/cultural resources. Future county plans include further identification of and protection guidelines for unique geologic features and viewscapes, such as ridgelines.

3.3.5 Socioeconomics

Relative to the Project Area, population, employment and income, housing, and community services are discussed in the following sections.

3.3.5.1 Population

The Larimer County population is estimated to be about 248,987 in 2000 (Larimer County 2000a). The Project Area is primarily classified as rural in the area of the ROW from the LaPorte Tap to the Rawhide Energy Station. The majority of the county population is located within the City of Fort Collins (Colorado Demography Section, 2000a). The City of Fort Collins has a population of 118,720 based on a 2000 estimate (Larimer County 2000a)

The population growth in Larimer County is shown in **Table 3-3**. The estimated population in Larimer County has increased by 27.6 percent from 1990 to 1999, and 24.8 percent from 1980 to 1990 (U.S. Census Bureau 1998). The Larimer County population is projected to be 294,858 by the year 2010 (Larimer County 2000a).

The majority of the residents in Larimer County are between the ages of 25 and 64 years (U.S. Census Bureau 1999a). The residents of the county comprise a fairly homogeneous population, with a very low percentage of minorities. The races comprising the population of Larimer County in 1996 included 96.8 percent white, 7.5 percent of Hispanic origin (may be of any race), 1.8 percent Asian or Pacific Islanders, 0.7 percent black, and 0.7 percent American Indian (U.S. Census Bureau 2000).

TABLE 3-3
Population Growth in the Project Area

Year	Larimer County	City of Fort Collins
1970	89,900	43,337
1980	149,184	65,092
1990	186,136	87,758
1995	215,742	101,343
1999	239,872	114,262

Source: Larimer County 2000a.

3.3.5.2 Employment and Income

Major employers in Larimer County include Colorado State University, Poudre R-1 School District, Kodak Colorado, Hewlett-Packard, Poudre Valley Hospital, Larimer County, City of Fort Collins, Teledyne Waterpik, and Anheuser Busch (Larimer County 2000a).

Unemployment in the Fort Collins-Loveland area was approximately 3.1 percent in 1999 (DOLA 1999). The estimated median household income in 1995 was $41,313 (U.S. Census Bureau 1999a). People of all ages in poverty in 1995 was estimated to be 9.1 percent for Larimer County (U.S. Census Bureau 1999b).

3.3.5.3 Housing

There were approximately 86,334 households in 1997 in Larimer County (Larimer County 2000b). The vacancy rate for the housing units in the county was approximately 8.8 in 1997 (DOLA 2000). The estimated number of housing units in Fort Collins increased from 35,267 in 1990 to 41,464 in 1996 (Colorado Demography Section 2000b).

3.3.5.4 Community Services

The Larimer County Sheriff's Department provides law enforcement, emergency response and assists in fire suppression within the Project Area.

Three primary school districts in Larimer County provide public schools: Poudre School District (Fort Collins area), Thompson R2-J (Loveland-Berthoud area), and Park R-3 (Estes Park). Two additional smaller school districts serve Johnston and St. Vrain (Longmont-Lyons area).

3.3.6 Public Health and Safety, and Electrical Effects

This section discusses the electrical characteristics of transmission lines including fire hazards, electric fields, magnetic fields, corona effects, and the possible associated public health and safety effects. Electrical wiring, electrical appliances, and transmission lines produce electric and magnetic fields (see **Table 3-4** and **Appendix E**). People are exposed to these fields in most areas of their daily life, such as work, school, and home.

TABLE 3-4
Magnetic Field Environment Summary of Domestic Appliance Magnetic Field Measurements

		Magnetic Field – mG	
Appliance Type	**Body Location**	**Typical Range**	**Maximum Value**
Range	Belt	1-80	175-625
Refrigerator	Chest	1-8	12-187
Microwave Oven	Belt	3-40	65-812
Can Opener	Belt	30-225	288-2750
Oven	Belt	1-8	14-67
Toaster	Belt	2-6	9
Coffee Maker	Chest	1-2	4-25
Freezer	Head	1-3	4-6
Mixer	Belt	2-11	16-387
Cloths Dryer	Belt	1-24	45-93
Dishwasher	Belt	1-15	28-712
Garbage Disposal	Belt	1-5	8-33
Ceiling Fan	Head	1-11	125
Electric Blanket	Belt	3-50	65
Waterbed Heater	Belt	1-9	20-27
Blow Dryer	Head	1-75	112-2125
Computer	Belt	1-25	49-1875
Typewriter	Belt	1-23	38
Make-up Mirror	Chest	1-29	44-125
Shaver	Head	50-300	500-6875
Aquarium	Belt	1-40	50-2000
Sewing Machine	Chest	1-23	26-1125
Electric Drill	Chest	56-194	300-1500
Circular Saw	Belt	19-48	84-562

Source: Silva 1988.

3.3.6.1 Fire Hazards

Lightning strikes to existing transmission line structures cause a small minority of wildfires in rural areas. Platte River transmission lines are designed with overhead ground wires and grounded structures to protect the system from lightning. There are a scarcity of trees or branches in the existing ROW, in part due to ongoing routine maintenance activities.

Large fires in the vicinity of transmissions lines represent a potential electrical hazard. The hot gases and smoke can create a conductive path to the ground. If a flashover occurs along this conductive path, people near the fire can possibly experience dangerous shocks. Flashover can also cause power outages.

Wildfire hazard areas within the Project Area are those areas west of the boundary shown on the *Larimer County Fire Hazard Area Map* prepared by the Colorado State Forest Service. Based on wildfire risk, Larimer County was ranked in 1992 and 1993 as the most hazardous county in Colorado (LCPD 1997b). The Project Area is not located in the areas designated as wildfire hazard areas.

Fire protection services in Larimer County are provided by fire protection districts, volunteer fire departments and the Larimer County Sheriff's Department. Fire fighting services for public lands is provided by the U.S. Forest Service, Colorado State Forest Service, and Rocky Mountain National Park. Larimer County is responsible for fire suppression and the associated the costs on private and state lands.

3.3.6.2 Electric Fields

Voltage on a wire (conductor) produces both electric and magnetic fields (EMFs) in the area surrounding the wire. Electric field strength is associated with the amount of the voltage of the transmission line, and is expressed as volts per meter (v/m) or kilovolts per meter (kV/m). Electric fields can not be seen, but are sometimes felt as a tingling at high strengths. The electric field gets weaker with distance from the source. Electric fields may be shielded by trees, buildings, and other objects. Electric fields may result in induced currents, spark discharge shocks, or induced shocks if conducting equipment that is not grounded contacts the power line. Such objects include large farm equipment and irrigation piping. Touching such equipment may experience a shock similar to touching a door knob after walking across a carpet. Handling conducting objects under the transmission line can result in spark discharges that are a nuisance.

3.3.6.3 Magnetic Fields

Magnetic fields are a function of the amount of current flowing through the wire. The unit of measurement to characterize a magnetic field is commonly the magnetic flux density, B, measured in units of Gauss (G). Because Gauss is a relatively large quantity, milligauss (mG) is often used (1000mG = 1G). Magnetic fields can not be seen or felt. Magnetic fields can not be shielded by objects and travel through many types of metal and soils. A table listing the magnetic field levels from home appliances is provided in **Table 3-4**.

3.3.6.4 Corona Effects

Corona effects occur due to the conversion of electrical energy near high voltage conductors into charged particles that can result in audible noise, electromagnetic interference with radio or television signals, visible light, and heat. Corona-generated audible noise is characterized as a crackling, hissing or humming noise, and is most noticeable during wet conductor conditions, such as rain or fog. During fair weather, audible noise is generally barely perceptible. Typical noise levels encountered in everyday life are shown in **Table 3-5**.

Larimer County has an ordinance concerning noise levels in unincorporated Larimer County. Construction projects are subject to a maximum permissible noise level of 80db(A) between the hours of 7:00 a.m. to 7:00 p.m. and 75db(A) between the hours of 7:00 p.m. and 7:00 a.m.

Radio reception in the AM broadcast band may be affected by "static". Interference with FM radio reception rarely occurs. Television interference due to corona effects appears as three bands of "snow" on the screen.

TABLE 3-5
Audible Noise Decibel Ratings of Some Common Noises

Typical Decibel Level (dBA)	Common Noises	Resulting Effect
0	Lowest Level Audible to Human Ear	Audible Noise from Electric Transmission Lines Generally Occurs in This Range
20	Quiet Library, Soft Whisper	
40	Refrigerator Humming	
60	Air Conditioner, Conversation	
80	Subway, Heavy City Traffic	
90	Lawn Mower, Motorcycle	
100	Wood Shop	
120	Chain Saw, Snowmobile	Danger Level
140	Rock, Concert, Firecrackers	
180	Rocket Pad During Launch	Hearing Loss

Source: National Institute on Deafness and Other Communication Disorders 1998.

Objectionable corona effects usually do not occur outside of the transmission line ROW. New transmission lines are designed to reduce the generation of corona effects.

Small amounts of ozone are also produced by corona effects. Ground level ozone concentrations resulting from high voltage transmission lines are not measurably different from ambient concentrations. Ozone concentrations resulting from transmission lines appear to be too low to have significant effects on health or the environment (DOE 1989).